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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/765,061	LEE ET AL.	
	Examiner	Art Unit	
	MARCUS T. RILEY	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/26/04, 06/14/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 01, 2008 has been entered.

Response to Amendment

2. This office action is responsive to the applicant's remarks received on January 25, 2008. **Claims 1-11** remain pending and newly added **claims 12-20** are rejected.

Response to Arguments

3. Applicant's arguments with respect to amended claims 1-3, 5,8 and 9 and newly added **claims 12-20,** filed on January 25, 2008 have been fully considered but they are not persuasive.

A: Applicant's Remarks

A. Response to the Section 103(a) Rejection of Claims 1-3, 5, 6, and 8-11 (Koga and Kanemitsu)

Claims 1-3, 5, 6, and 8-11 were rejected under Section 103(a) as being unpatentable over Koga in view of Kanemitsu. As discussed during the December 18th telephone conference and as set forth below, however, the applied references cannot support a Section 103 rejection of these

claims for at least the reason that these references fail to teach or suggest all the claimed features.

1. Independent Claim 1 is Directed to a Method of Detecting Images and Characters in a Master Copy, the Method Including, inter alia, Determining a Background Color of a Master Copy, Separating Content of the Master Copy into at Least One Image and at Least One Character Based at Least in Part on the Background Color, Processing the Image, Processing the Character, and Combining the Processed Image and Character

Independent claim 1 is directed to a method of detecting images and character in a master copy. The method includes determining a background color of the master copy and separating content of the master copy into at least one image and at least one character "based at least in part on said background color." The method further includes processing the image with halftone processing, processing the character with line art processing, and combining the processed image and the processed character as a whole.

2. The Applied Art

a. Koga Describes an Image Processing Apparatus and Method

Koga describes an image processing method and apparatus for extracting image segments having different characteristics from an input color image and judging each of the characteristics of these image segments. (Koga, 1:10-16.)

b. Kanemitsu Describes an Image Processing System

Kanemitsu describes an image processing system that enables clear reproduction of an original document that includes mixed characters, ruled lines, and photos. (Kanemitsu, 2:1-6.)

3. Koga and Kanemitsu Fail to Support a Prima Facie Case for Rejecting Claim 1 under Section 103 for at Least the Reason that These References Fail to Teach or Suggest Separating Content of a Master Copy into Image and Character Based at Least in Part on the Background Color

Koga and Kanemitsu fail to support a prima facie case for rejecting claim 1 under Section 103 for at least the reason that these references fail to disclose or suggest several claimed features. For example, as discussed during the December 18th telephone conference, Koga does not disclose or suggest "separating content of said master copy into at least one image and at least one character based at least in part on said background color." According to the Office Action, Koga describes this feature at column 5, lines 14-17. (Office Action, pp. 6 and 7.) The relied-upon portion of Koga actually states: "Fig. 17 is a block diagram showing the construction of an image segmentation unit for discriminating between a character/line-drawing image segment and a pseudo-halftone image segment." The relied-upon portion of Koga does not teach or suggest separating the content of a master copy based at least in part on the master copy's background color, as recited in claim 1. In fact, nowhere does Koga teach or suggest this feature. Kanemitsu fails to cure the deficiencies of Koga with respect to claim 1. Accordingly, for at least this reason, claim 1 is patentable over the combination of Koga and Kanemitsu. During the course of the telephone conference, the Examiner indicated that he would reconsider the rejection of claim 1 in light of these remarks. Therefore, the undersigned attorney respectfully requests that the Examiner reconsider and withdraw the rejection of claim 1.

Claim 2 depends from base claim 1. Claim 2 recites, inter alia, "choosing a second background color from at least one of said individual areas." According to the Office Action,

Koga describes this feature at column 4, lines 22-25. (Office Action, pp. 8 and 9.) The relied-upon portion of Koga actually states: "The invention further discloses an image processing apparatus ... having ... second extraction means for extracting an image segment from the input color image using data of the image segment extracted by the first extraction means." (Koga, 4:17-25.) In the relied-upon portion, Koga describes the components (i.e., the structural aspects) of the image processing apparatus. A second extraction means, which is a structural aspect, does not and cannot correspond to "choosing a second background color from at least one of said individual areas," as recited in claim 2. In fact, nowhere does Koga teach or suggest this feature of claim 2. Furthermore, Kanemitsu fails to cure the deficiencies of Koga with respect to claim 2. Accordingly, for at least the reasons discussed above with respect to claim 1 and for these additional reasons, claim 2 is patentable over the combination of Koga and Kanemitsu. During the course of the telephone conference, the Examiner indicated that he would reconsider the rejection of claim 2 in light of these remarks. Therefore, the undersigned attorney respectfully requests that the Examiner reconsider and withdraw the rejection of claim 2.

Claim 3 depends from base claim 1. Accordingly, the Section 103 rejection of dependent claim 3 should be withdrawn for at least the foregoing reasons discussed above with respect to claim 1, and for the additional features of this dependent claim.

Independent claims 5 and 8 include several features generally similar to those of claim 1. For example, claim 5 recites "separating the content of the master copy into images and text based at least in part on the first background color," and claim 8 recites "dividing content of said master copy into images and text with said chosen background color as a criterion." Accordingly, claims 5 and 8 are patentable over Koga and Kanemitsu for the reasons discussed

above with respect to claim 1, and for the additional features of these independent claims. Therefore, the Section 103 rejection of claims 5 and 8 should be withdrawn.

Claim 6 depends from base claim 5, and claims 9-11 depend from base claim 8. Accordingly, the Section 103 rejection of claims 6 and 9-11 should be withdrawn for at least the foregoing reasons, and for the additional features of these dependent claims.

A: Examiner's Response

Claims 1-3, 5, 6, and 8-11 were rejected under Section 103(a) as being unpatentable over Koga in view of Kanemitsu. As discussed during the December 18th telephone conference, Applicant's representative presentated his position on the claimed invention. Ways to overcome the prior art were discussed and the examiner decided to formally consider the proposed position of the applicant by taking a more indebt look at the prior art.

However, the applied references supports a Section 103 rejection of claims 1-3, 5, 6, and 8-11 because Koga in view of Kanemitsu does not fail to teach or suggest all the claimed features.

Koga and Kanemitsu does not fail to support a prima facie case for rejecting claim 1. Koga and Kanemitsu discloses, teaches or suggests "separating content of said master copy into at least one image and at least one character based at least in part on said background color." ("*In FIG. 36, a background color extraction step 221 analyzes the colors of the inputted intermediate image segment and extracts the color of the background image segment.*" Koga '711 at column 28, lines 11-14). Thus, Koga teaches or suggest separating the content of a master copy based at least in part on the master copy's background color, as recited in claim 1.

Accordingly claim 1 is not patentable over the combination of Koga and Kanemitsu.

Claim 2 depends from base claim 1. Claim 2 recites, inter alia, "choosing a second background color from at least one of said individual areas." Koga '711 discloses choosing a second background color from at least one of said individual areas ("*...and second extraction means for extracting an image segment from the input color image using data of the image segment extracted by the first extraction means.*" column 4, lines 22-25). Here, Koga describes an image processing method comprising an input step of inputting a color image, an extraction step of extracting image segments, which have characteristics different from a background image segment of the inputted color image, from the color image, and a discrimination step of discriminating the characteristics of each image segment extracted at the extraction step (*"...the foregoing object is attained by providing an image processing method comprising an input step of inputting a color image, an extraction step of extracting image segments, which have characteristics different from a background image segment of the inputted color image, from the color image, and a discrimination step of discriminating the characteristics of each image segment extracted at the extraction step."* Koga at column 3, lines 59-67). Thus, Koga teaches or suggest choosing a second background color from at least one of said individual areas as recited in claim 2.

Accordingly claim 2 is not patentable over the combination of Koga and Kanemitsu.

Claim 3 depends from base claim 1. Accordingly, the Section 103 rejection of dependent claim 3 is not withdrawn for at least the reasons discussed above with respect to claim 1.

Independent claims 5 and 8 include several features generally similar to those of claim 1. Accordingly, claims 5 and 8 are not patentable over Koga and Kanemitsu for the reasons

discussed above with respect to claim 1. Therefore, the Section 103 rejection of claims 5 and 8 are not withdrawn.

Claim 6 depends from base claim 5, and claims 9-11 depend from base claim 8. Accordingly, the Section 103 rejection of claims 6 and 9-11 are not withdrawn for at least the foregoing reasons.

B: Applicant's Remarks

Response to the Section 103(a) Rejection of Claims 4 and 7 (Koga, Kanemitsu, and Beams)

Claims 4 and 7 were rejected under Section 103(a) as unpatentable over Koga in view of Kanemitsu and Beams. Claim 4 depends from base claim 1, and claim 7 depends from base claim 5. As discussed above, Koga and Kanemitsu fail to disclose or suggest all the features of claims 1 and 5. Bearss is relied on in the Office Action for describing a dithering process that comprises a sampling mode dithering. (Office Action, pp. 18 and 19.) Even assuming for the sake of argument that this is correct, Bearss fails to cure the above-noted deficiencies of Koga and Kanemitsu to support Section 103 rejections of base claims 1 and 5. Accordingly, claims 4 and 7 are allowable over the combination of Koga, Kanemitsu, and Bearss for at least the reason that these references, either alone or in combination, fail to disclose or suggest the features of claims 1 and 5, and the additional features of corresponding dependent claims 4 and 7. Therefore, the Section 103 rejections of dependent claims 4 and 7 should be withdrawn.

B: Examiner's Response

Claims 4 and 7 were rejected under Section 103(a) as unpatentable over Koga in view of Kanemitsu and Bearss. Claim 4 depends from base claim 1, and claim 7 depends from base claim 5. Koga and Kanemitsu does not fail to disclose or suggest all the features of claims 1 and 5. Bearss does not fail to cure the deficiencies of Koga and Kanemitsu to support Section 103 rejections of base claims 1 and 5. Accordingly, claims 4 and 7 are not allowable over the combination of Koga, Kanemitsu, and Bearss, because Bearss discloses where the dithering process comprises a sampling mode dithering ("*As will be understood by those of ordinary skill in the art, the placement of orphan pixels in FIG. 2 is merely exemplary, and variations may also serve for a 3.times.3 sampling/detection window. Moreover, the orphan placement may also vary given a different size window, such as for a 5.times.5 area window, a 1.times.3 area window, or for a multiple sampling/detection window configuration.*" column 6, lines 42-47).

Thus, Koga, Kanemitsu, and Bearss either alone or in combination discloses or suggest the features of claims 1 and 5, and the additional features of corresponding dependent claims 4 and 7. Therefore, the Section 103 rejections of dependent claims 4 and 7 are not withdrawn.

Claim Objections

4. The following is a quotation of 37 CFR 1.75(d)(1):

> The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

5. **Claim 20** is objected to under 37 CFR 1.75(d)(1), as failing to conform to the invention as set forth in the remainder of the specification. Claim 20 states in part "*...a component*

configured to transversely and/or vertically cut the condensed area." It is not understood whether the component is configured to cut *transversely and vertically* or whether the component is configured to cut *transversely or vertically.* It is assumed for continued examination purposes that claim 6 is intended to read *"...a component configured to transversely or vertically cut the condensed area."* Suggest deleting *"and/or"* and replacing it with *"or"*.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claims 1, 2, 5, 8-11, 14, and 17-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Koga et al. (US 6,556,711 B2, hereinafter Koga '711) in combination with Kanemitsu et al. (US 4,996,603, hereinafter Kanemitsu '603).

Regarding claim 1; Koga '711 discloses a method of detecting images and characters in a master copy, the method comprising: determining a background color of said master copy (*"FIG. 7 is a diagram showing the detailed procedure of the background image segmentation step 22. A background color extraction step 211 analyzes the colors of the inputted intermediate image segment and judges whether the inputted intermediate image segment contains a color indicative of a background image segment."* column 11, lines 50-55); and separating content of the master copy into at least one image and at least one character based at least in part on said background color (*" In FIG. 36, a background color extraction step 221 analyzes the colors of*

the inputted intermediate image segment and extracts the color of the background image segment." column 28, lines 11-14).

Koga '711 does not expressly disclose processing said image with halftone processing, processing a character with line art processing and combining the processed photo and processed character as a whole.

Kanemitsu '603 discloses processing a photo with halftone processing (*"When the circuit 3 detects a photo portion, the half-tone signal HTS is selected."* column 4, lines 38-39); processing a character with line art processing ("*In the selection circuit 4, when the circuit 3 detects a character portion, the fixed slice signal FSS is selected."* column 6, lines 36 and 37); and combining the processed image and processed character as a whole (*"Ref FIG. 1 is a schematic block diagram of a general image processing system. In FIG. 1, reference number 100 denotes an original image of a document to be scanned, 101 an image scanner, 102 a personal computer with a display (CRT), 103 a laser printer and 104 an image reproduced by the printer. The original image includes characters, ruled lines, and photos. They are scanned by the image scanner 101 and converted to a multi-level signal and then converted to a binary signal having values of "0" or "1". The binary signal is input into the personal computer 102 and printed by the laser printer 103 so that the original image can be reproduced."* column 3, lines 1-13).

Koga '711 and Kanemitsu '603 are combinable because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by adding a method of

processing a photo with halftone processing, processing a character with line art processing and combining the processed photo and processed character as a whole as taught by Kanemitsu '603.

The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58).

Therefore, it would have been obvious to combine Koga '711 with Kanemitsu '603 to obtain the invention as specified in claim 1.

Regarding claim 2; Koga '711 discloses condensing master copy into a condensed area based at least in part on said background color (*"Here the reduced image is obtained by reducing the size of the input image in the horizontal and vertical directions...*" column 33, lines 57-59); cutting transversely the condensed area ("*...an image reduced by ½ vertically and horizontally can be created.*" column 34, lines 9-11); cutting vertically the transversely cut area into several individual areas ("*The input image is divided into blocks 3101 of two pixels vertically and two pixels horizontally (for a total of four pixels) shown in FIG. 45, and one pixel in each block (say a pixel 3102 in the upper left-hand corner) is made one corresponding pixel 3103 of the reduced image, whereby an image reduced by ½ vertically and horizontally can be created.*" column 34, lines 5-11); choosing a second background color from at least one of said individual areas ("*...and second extraction means for extracting an image segment from the input color image*

using data of the image segment extracted by the first extraction means." column 4, lines 22-25); marking said at least one of said individual areas with image as an image area ("*In the second embodiment, however, a binary image compressed by a compression method stored in the compressed-data header is registered as "image-segment shape".*" column 22, lines 39-42); marking at least one of said individual areas with character as a character area ("*...an image portion corresponding to the image-segment position of node to be processed is compressed by a coding method suited to a continuous color tone and the compressed data is registered as the "image-segment image data...*" column 23, lines 32-36); utilizing second background color to condense individual areas and repeating said condensing of said individual areas if said image area and the character area of the individual areas are not identifiable (*"It should be noted that quantization may be performed again when the color histogram is created. For example, in a case where an image of eight bits per R, G, B has been inputted, creating a color histogram while re-quantizing to four bits or seven bits results in a more complicated process. However, the memory size for storing the histogram can be reduced. An additional effect is that even if the color of the background image segment is uneven, a background image segment can be segmented in stable fashion."* column 12, lines 14-23).

Regarding claim 5;

a. Koga '711 discloses choosing a first background color from the master copy ("*FIG. 7 is a diagram showing the detailed procedure of the background image segmentation step 22. A background color extraction step 211 analyzes the colors of the inputted intermediate*

image segment and judges whether the inputted intermediate image segment contains a color indicative of a background image segment." column 11, lines 50-55);

b. Koga '711 discloses separating the content of the master copy into images and text based at least in part the first background color (" *FIG. 7 is a block diagram showing the construction of an image segmentation unit for discriminating between a character/line-drawing image segment and a pseudo-halftone image segment;*" column5, lines 14 -17);

c. Koga '711 discloses condensing the master copy based at least in part on the first background color (*"Here the reduced image is obtained by reducing the size of the input image in the horizontal and vertical directions...*" column 33, lines 57-59);

d. Koga '711 discloses cutting transversely the condensed master copy based at least in part on the first background color ("*...an image reduced by ½ vertically and horizontally can be created.*" column 34, lines 9-11);

e. Koga '711 discloses cutting vertically the transversely cut master copy based at least in part on the first background color in order to create several individual areas (*"The input image is divided into blocks 3101 of two pixels vertically and two pixels horizontally (for a total of four pixels) shown in FIG. 45, and one pixel in each block (say a pixel 3102 in the upper left-hand corner) is made one corresponding pixel 3103 of the reduced image, whereby an image reduced by ½ vertically and horizontally can be created.*" column 34, lines 5-11);

f. Koga '711 discloses choosing a second background color from the individual areas ("*...and second extraction means for extracting an image segment from the input color image using data of the image segment extracted by the first extraction means.*" column 4, lines 22-25);

g. Koga '711 discloses identifying images and text based at least in part on the second background color ("*...and second extraction means for extracting an image segment from the input color image using data of the image segment extracted by the first extraction means.*" column 4, lines 22-25);

h. Koga '711 discloses marking the individual areas with images as an image area ("*In the second embodiment, however, a binary image compressed by a compression method stored in the compressed-data header is registered as "image-segment shape"...*" column 22 lines 39-42);

i. Koga '711 discloses marking the individual areas with text as text area (*"...stores the created compression data in the compressed-data memory 1012. More specifically, an image portion corresponding to the image-segment position of node to be processed is compressed by a coding method suited to a continuous color tone and the compressed data is registered as the "image-segment image data..."* column 23, lines 31-36);

j. Koga '711 discloses if the individual areas cannot be identified, replacing the first background color with the second background color, condensing the unidentifiable individual areas based at least in part on the second background color, and then repeating d to j ("*Under the control of an image-segment discrimination control step 31, the foregoing steps are repeated until there are no longer any undiscriminated image segments. As a result, image-segment components of each image segment are discriminated"* column 14, lines 56-60);

Koga '711 does not expressly disclose processing images with halftone processing, processing text with line art processing and outputting the processed images and processed text as a whole.

k. Kanemitsu '603 discloses processing images with halftone processing ("*When the circuit 3 detects a photo portion, the half-tone signal HTS is selected.*" column 4, lines 38-39);

l. Kanemitsu '603 discloses processing text with line art processing ("*In the selection circuit 4, when the circuit 3 detects a character portion, the fixed slice signal FSS is selected.*" column 6, lines 36 and 37);

m. Kanemitsu '603 discloses outputting the processed images and processed text as a whole (*"Ref FIG. 1 is a schematic block diagram of a general image processing system. In FIG. 1, reference number 100 denotes an original image of a document to be scanned, 101 an image scanner, 102 a personal computer with a display (CRT), 103 a laser printer and 104 an image reproduced by the printer. The original image includes characters, ruled lines, and photos. They are scanned by the image scanner 101 and converted to a multi-level signal and then converted to a binary signal having values of "0" or "1". The binary signal is input into the personal computer 102 and printed by the laser printer 103 so that the original image can be reproduced."* column 3, lines 1-13).

Koga '711 and Kanemitsu '603 are combinable because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by processing images with halftone processing, processing text with line art processing and outputting the processed images and processed text as a whole as taught by Kanemitsu '603.

The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58).

Therefore, it would have been obvious to combine Koga '711 with Kanemitsu '603 to obtain the invention as specified in claim 5.

Regarding claim 8; Koga '711 discloses a method of detecting images and text in a master copy, the method comprising: choosing a first background color from said master copy ("*FIG. 7 is a diagram showing the detailed procedure of the background image segmentation step 22. A background color extraction step 211 analyzes the colors of the inputted intermediate image segment and judges whether the inputted intermediate image segment contains a color indicative of a background image segment.*" column 11, lines 50-55); dividing the content of the master copy into images and text with the first chosen background color as the criterion ("*In FIG. 36, a background color extraction step 221 analyzes the colors of the inputted intermediate image segment and extracts the color of the background image segment.*" column 28, lines 11-14).

Koga '711 does not expressly disclose processing said images with halftone processing to present said images with a clear tone level graduation; processing text with line art processing to clearly present the text; and combining processed images and processed text.

Kanemitsu '603 discloses processing images with said halftone processing to present said images with a clear tone level graduation (*"When the circuit 3 detects a photo portion, the half-tone signal HTS is selected."* column 4, lines 38-39). See also (*"The object of the present invention is to provide an image processing system enabling clear reproduction of an original document including mixed characters, ruled lines, and photos."* column 2, lines 3-6); processing text with line art processing to clearly present the text (*"In the selection circuit 4, when the circuit 3 detects a character portion, the fixed slice signal FSS is selected."* column 6, lines 36-37). See also (*"The object of the present invention is to provide an image processing system enabling clear reproduction of an original document including mixed characters, ruled lines, and photos."* column 2, lines 3-6); combining processed images and processed text (*"Ref FIG. 1 is a schematic block diagram of a general image processing system. In FIG. 1, reference number 100 denotes an original image of a document to be scanned, 101 an image scanner, 102 a personal computer with a display (CRT), 103 a laser printer and 104 an image reproduced by the printer. The original image includes characters, ruled lines, and photos. They are scanned by the image scanner 101 and converted to a multi-level signal and then converted to a binary signal having values of "0" or "1". The binary signal is input into the personal computer 102 and printed by the laser printer 103 so that the original image can be reproduced."* column 3, lines 1-13).

Koga '711 and Kanemitsu '603 are combinable because they are from same field of endeavor of an image processing apparatus (*"Image Processing System"* Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by processing said images with halftone processing to present said images with a clear tone level graduation; processing text with line art processing to clearly present the text; and combining processed images and processed text as taught by Kanemitsu '603.

The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58).

Therefore, it would have been obvious to combine Koga '711 with Kanemitsu '603 to obtain the invention as specified in claim 8.

Regarding claim 9; Koga '711 discloses condensing the master copy into a condensed area based on at least in part the background color (*"Here the reduced image is obtained by reducing the size of the input image in the horizontal and vertical directions...*" column 33, lines 57-59); cutting transversely the condensed area ("*...an image reduced by ½ vertically and horizontally can be created.*" column 34, lines 9-11); cutting vertically the transversely cut area for dividing the original area into several individual areas ("*The input image is divided into blocks 3101 of two pixels vertically and two pixels horizontally (for a total of four pixels) shown in FIG. 45, and one pixel in each block (say a pixel 3102 in the upper left-hand corner) is made*

one corresponding pixel 3103 of the reduced image, whereby an image reduced by ½ vertically and horizontally can be created." column 34, lines 5-11); choosing a second background color from at least one of said individual areas ("*...and second extraction means for extracting an image segment from the input color image using data of the image segment extracted by the first extraction means.*" column 4, lines 22-25); marking at least one of said individual areas with said images as an image area ("*In the second embodiment, however, a binary image compressed by a compression method stored in the compressed-data header is registered as "image-segment shape"...*" column 22 lines 39-42); marking at least one of said individual areas with said text as a text area ("*...stores the created compression data in the compressed-data memory 1012. More specifically, an image portion corresponding to the image-segment position of node to be processed is compressed by a coding method suited to a continuous color tone and the compressed data is registered as the "image-segment image data...*" column 23, lines 31-36); utilizing second background color to condense individual area and repeating the condensing if the image area and the text area of the individual areas are not identifiable (*"It should be noted that quantization may be performed again when the color histogram is created. For example, in a case where an image of eight bits per R, G, B has been inputted, creating a color histogram while re-quantizing to four bits or seven bits results in a more complicated process. However, the memory size for storing the histogram can be reduced. An additional effect is that even if the color of the background image segment is uneven, a background image segment can be segmented in stable fashion."* column 12, lines 14-23).

Regarding claim 10; Koga '711 discloses where the method is carried out in a scanner (*"...the color image input unit 1001 may be an input unit for reading in an image by a color image scanner..."* column 9, lines 18-20).

Regarding claim 11; Koga '711 discloses where the method is carried out in a fax (*"The image processing apparatus and method described below can be utilized in pixel-density conversion or zoomed output in a device, such as a color printer, which handles a color document image, in pixel-density conversion at the time of enlargement/reduction and output in a DTP system, and in pixel-density conversion and zoomed output in a color facsimile."* column 8, lines 22-28).

Regarding claim 14; Koga '711 discloses an apparatus that automatically detects images and text in a master copy, the apparatus comprising: a component configured to determine a background color of the master copy (*"FIG. 7 is a diagram showing the detailed procedure of the background image segmentation step 22. A background color extraction step 211 analyzes the colors of the inputted intermediate image segment and judges whether the inputted intermediate image segment contains a color indicative of a background image segment."* column 11, lines 50-55); a component configured to separate content of the master copy into images and text based at least in part on the background color (*" In FIG. 36, a background color extraction step 221 analyzes the colors of the inputted intermediate image segment and extracts the color of the background image segment."* column 28, lines 11-14).

Koga '711 does not expressly disclose a component configured to process the images with halftone processing; a component configured to process the text with line art processing; and a component configured to combine the processed images and the processed text.

Kanemitsu '603 discloses a component configured to process the images with halftone processing (*"When the circuit 3 detects a photo portion, the half-tone signal HTS is selected."* column 4, lines 38-39); a component configured to process the text with line art processing (*"In the selection circuit 4, when the circuit 3 detects a character portion, the fixed slice signal FSS is selected."* column 6, lines 36 and 37); and a component configured to combine the processed images and the processed text (*"Ref FIG. 1 is a schematic block diagram of a general image processing system. In FIG. 1, reference number 100 denotes an original image of a document to be scanned, 101 an image scanner, 102 a personal computer with a display (CRT), 103 a laser printer and 104 an image reproduced by the printer. The original image includes characters, ruled lines, and photos. They are scanned by the image scanner 101 and converted to a multi-level signal and then converted to a binary signal having values of "0" or "1". The binary signal is input into the personal computer 102 and printed by the laser printer 103 so that the original image can be reproduced."* column 3, lines 1-13).

Koga '711 and Kanemitsu '603 are combinable because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 by adding a component configured to process the images with halftone processing; a component configured to process

the text with line art processing; and a component configured to combine the processed images and the processed text as taught by Kanemitsu '603.

The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58).

Therefore, it would have been obvious to combine Koga '711 with Kanemitsu '603 to obtain the invention as specified in claim 14.

Regarding claim 17; Koga '711 discloses wherein the apparatus is a fax machine fax (*"The image processing apparatus and method described below can be utilized in pixel-density conversion or zoomed output in a device, such as a color printer, which handles a color document image, in pixel-density conversion at the time of enlargement/reduction and output in a DTP system, and in pixel-density conversion and zoomed output in a color facsimile."* column 8, lines 22-28).

Regarding claim 18; Koga '711 discloses wherein the apparatus is a copier (*"A color image output unit 1005 outputs the zoomed image data created by the adaptive zoom unit 1004 and stored in the zoomed-image memory 1008. The destination of this output is a display, a*

printer or copier for making hard copies, a communication line or an image storage device." column 9, lines 52-56).

Regarding claim 19; Koga '711 discloses The apparatus of claim 14, further comprising a component configured to condense the master copy into a condensed area based at least in part on the background color (*"Here the reduced image is obtained by reducing the size of the input image in the horizontal and vertical directions..."* column 33, lines 57-59);

Regarding claim 20; Koga '711 discloses a component configured to transversely or vertically cut the condensed area ("*...an image reduced by ½ vertically and horizontally can be created.*" column 34, lines 9-11).

8. **Claims 3, 6, 12, 13 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Koga '711 and Kanemitsu '603 as applied to claim 1 above, and further in view of Kanemitsu '603.

Regarding claim 3; Koga '711 and Kanemitsu '603 as modified does not expressly disclose wherein said halftone processing comprises a dithering process.

Kanemitsu '603 discloses wherein the halftone processing comprises a dithering process ("*...the multi-level signal of the photo portions of the original image is binary-coded by the half-tone processing method based on dithering for binary coding the multi-level signal based on a predetermined dither pattern.*" column 3, lines 19-23).

Koga '711 and Kanemitsu '603 are combinable with Kanemitsu '603 because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 and Kanemitsu '603 by adding wherein the halftone process comprise of a dithering process as taught by Kanemitsu '603.

The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58).

Therefore, it would have been obvious to combine Koga '711 and Kanemitsu '603 with Kanemitsu '603 to obtain the invention as specified in claim 1.

Regarding claim 6; Koga '711 and Kanemitsu '603 as modified does not expressly disclose where said halftone processing comprises a dithering process.

Kanemitsu '603 discloses the halftone processing is a dithering process (*"...the multi-level signal of the photo portions of the original image is binary-coded by the half-tone processing method based on dithering for binary coding the multi-level signal based on a predetermined dither pattern."* column 3, lines 19-23).

Koga '711 and Kanemitsu '603 are combinable with Kanemitsu '603 because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 and Kanemitsu '603 by making the halftone process comprise of a dithering process as taught by Kanemitsu '603.

The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58).

Therefore, it would have been obvious to combine Koga '711 and Kanemitsu '603 with Kanemitsu '603 to obtain the invention as specified in claim 5.

Regarding claim 12; Koga '711 and Kanemitsu '603 as modified does not expressly disclose wherein processing said images with halftone processing to present said images with a clear tone level graduation includes processing said images with halftone processing to present said images with a clear tone level graduation divided into 1024 levels.

Kanemitsu '603 discloses wherein processing said images with halftone processing to present said images with a clear tone level graduation includes processing said images with halftone processing to present said images with a clear tone level graduation divided into 1024

levels (*"The object of the present invention is to provide an image processing system enabling clear reproduction of an original document including mixed characters, ruled lines, and photos."* column 2, lines 3-6). See also (*"...there is provided an image processing system for obtaining a binary signal from a multi -level signal read by an image scanner from an original document including mixed characters, ruled lines, and photos, then, obtaining a reproduction image from the binary signal, the image processing system including; a fixed slice processing unit for receiving the multi -level signal, and for slicing the multi -level signal by a predetermined fixed threshold level, and outputting the binary signal sliced by the fixed threshold level; a half -tone processing unit for receiving the multi -level signal, and for slicing the multi -level signal by a plurality of threshold levels defined by dithering, and outputting the binary signal sliced by the plural threshold levels defined by the dithering..."* column 2, lines 7-22).

Koga '711 and Kanemitsu '603 are combinable with Kanemitsu '603 because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 and Kanemitsu '603 by adding wherein processing said images with halftone processing to present said images with a clear tone level graduation includes processing said images with halftone processing to present said images with a clear tone level graduation divided into 1024 levels as taught by Kanemitsu '603.

The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58).

Therefore, it would have been obvious to combine Koga '711 and Kanemitsu '603 with Kanemitsu '603 to obtain the invention as specified in claim 8.

Regarding claim 13; Kanemitsu '603 discloses wherein processing said text with line art processing to clearly present the text includes processing said text with line art processing having two values for said text (*"The original image includes characters, ruled lines, and photos. They are scanned by the image scanner 101 and converted to a multi -level signal and then converted to a binary signal having values of "0" or "1".* column 3, lines 6-10).

Regarding claim 15; Koga '711 and Kanemitsu '603 as modified does not expressly disclose wherein the component configured to process the images with halftone processing is further configured to process the images with a dithering process.

Kanemitsu '603 discloses wherein the component configured to process the images with halftone processing is further configured to process the images with a dithering process (*"...the multi-level signal of the photo portions of the original image is binary-coded by the half-tone*

processing method based on dithering for binary coding the multi-level signal based on a predetermined dither pattern." column 3, lines 19-23).

Koga '711 and Kanemitsu '603 are combinable with Kanemitsu '603 because they are from same field of endeavor of an image processing apparatus ("*Image Processing System*" Kanemitsu '603, see eg. Title).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the image processing apparatus as taught by Koga '711 and Kanemitsu '603 by adding wherein the component configured to process the images with halftone processing is further configured to process the images with a dithering process as taught by Kanemitsu '603.

The motivation for doing so would have been because this would provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed (*"An object of the present invention is to... provide an image processing apparatus and method in which excellent processing is applied to a color image in which image segments having different characteristics are mixed.*" Koga '711 at column 3, lines 55-58).

Therefore, it would have been obvious to combine Koga '711 and Kanemitsu '603 with Kanemitsu '603 to obtain the invention as specified in claim 14.

8. **Claims 4, 7 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Koga '711 and Kanemitsu '603 as applied to claim 1 above, and further in view of Bearss et al. (US 5,987,221 hereinafter Bearss '221).

Regarding claim 4; The combination of Koga '711 and Kanemitsu '603 does not expressly disclose where the dithering process comprises a sampling mode dithering.

Bearss '221 discloses where the dithering process comprises a sampling mode dithering ("*As will be understood by those of ordinary skill in the art, the placement of orphan pixels in FIG. 2 is merely exemplary, and variations may also serve for a 3.times.3 sampling/detection window. Moreover, the orphan placement may also vary given a different size window, such as for a 5.times.5 area window, a 1.times.3 area window, or for a multiple sampling/detection window configuration.*" column 6, lines 42-47).

Koga '711 and Kanemitsu '603 are combinable with Bearss '221 because they are from the same field of endeavor of imaging systems (*"This invention relates in general to imaging systems..."* Bearss '221 at column 1, lines 7-9).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the imaging system as taught by the combination of Koga '711 and Kanemitsu '603 by adding dithering process comprising a sampling mode dithering as taught by Bearss '221.

The motivation for doing so would have been because it would improve the chances for discriminating between halftone image data and text/line art image data during rendering (*"...the placement of orphan pixels in dither matrix 40 at least enhances the probability of having and detecting orphan pixels in the resultant raster image array 50, thus improving the chances for discriminating between halftone image data and text/line art image data during rendering."* Bearss '221 at column 7, lines 6-11).

Therefore, it would have been obvious to combine Koga '711 and Kanemitsu '603 with Bearss '221 to obtain the invention as specified in claim 1.

Regarding claim 7; Bearss '221 discloses where the dithering process comprises a sampling mode dithering (*"As will be understood by those of ordinary skill in the art, the placement of orphan pixels in FIG. 2 is merely exemplary, and variations may also serve for a 3.times.3 sampling/detection window. Moreover, the orphan placement may also vary given a different size window, such as for a 5.times.5 area window, a 1.times.3 area window, or for a multiple sampling/detection window configuration."* column 6, lines 42-47).

Regarding claim 16; Bearss '221 discloses wherein the component configured to process the images with a dithering process is further configured to process the images with a sampling mode dithering (*"As will be understood by those of ordinary skill in the art, the placement of orphan pixels in FIG. 2 is merely exemplary, and variations may also serve for a 3.times.3 sampling/detection window. Moreover, the orphan placement may also vary given a different size window, such as for a 5.times.5 area window, a 1.times.3 area window, or for a multiple sampling/detection window configuration."* column 6, lines 42-47).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARCUS T. RILEY whose telephone number is (571)270-1581. The examiner can normally be reached on Monday - Friday, 7:30-5:00, est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler L. Haskins can be reached on 571-272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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